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Eliminating the Suffering and Death Due to Cancer

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NCAB Considers Expanded Intramural/Extramural Collaborations

Leading National Cancer Institute (NCI) scientists briefed the National Cancer Advisory Board (NCAB) last week on several innovative collaborations involving NCI-funded extramural researchers and NCI's intramural research program. With cancer research moving toward a more transdisciplinary, team approach, the briefing was an update on how NCI is advancing team science and serving as a venue to discuss expansion of collaboration between the intramural and extramural communities.

In particular, noted Dr. J. Carl Barrett, director of the NCI Center for Cancer Research (CCR), NCI leadership is looking to NCAB for guidance on leveraging the unique opportunities offered by the National Institutes of Health (NIH) clinical center.

Several of the collaborations between the NCI intramural and extramural community involve consortia, which can provide the large number of patients and investigational uniformity needed to answer some of the most difficult cancer research questions. The Molecular Neuro-Oncology Consortia, jointly led by NCI and the National Institute of Neurological Disorders and Stroke, for example, has launched the Glioma Molecular

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Director's Update

Annual Budget Proposal Provides Insight into NCI Priorities

It is with great hope for the future that I have submitted to Congress *The Nation's Investment in Cancer Research* (available at http://plan.cancer.gov), NCI's plan and budget proposal for fiscal year 2006. This proposal reflects efforts to acquire and apply the resources and programs to achieve our challenge goal to the nation—to eliminate suffering and death due to cancer by 2015.

Anchored in seven strategic investment areas, this proposal describes next steps for delivering the promise of improved cancer care and public health for all. These strategic areas are: cancer prevention, early detection, and prediction; overcoming cancer health disparities; the strategic development of cancer interventions; an integrated cancer trials system; advanced technologies; integrative cancer biology; and molecular epidemiology.

Also featured in the document is

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Diagnostic Initiative (GMDI). GMDI includes a retrospective study of approximately 300 glioma tumor specimens, and a 1,000- to 1,500-patient prospective study involving collaborative groups and select other institutions funded by the NCI Cancer Therapy Evaluation Program.

Through GMDI, vital clinical and molecular data collected through both studies will help produce a pathological classification system for gliomas that correlates strongly with disease outcome. New molecular targets for treatment will likely be identified. One probable result: clinicians will be able to make far more accurate prognoses and more informed decisions on treatment. One of the central components of GMDI, stressed Dr. Howard Fine, chief of the CCR Neuro-Oncology Branch, is "a publicly accessible database that will contain not only the data, but the analysis tools for all ends of the research spectrum, from sophisticated users…all the way to the clinician."

Another intramural/extramural collaboration highlighted during the meeting involved cancer imaging, including efforts between NCI, extramural research groups, and industry. During the board discussion that followed the presentations, several board members suggested that, because many centers don't have the resources to perform sophisticated imaging procedures or synthesize the agents used in the procedures, imaging could be an excellent candidate for collaborative research programs.

Imaging components of some clinical trials could be done at the clinical center, even on an outpatient basis, said Dr. Karen Antman, NCI deputy director of Clinical and Translational Sciences. Some of the NCI cooperative groups have had problems getting third-party payers to cover repetitive imaging for their studies, she noted. Patients from these trials could travel at no cost to the NIH clinical center to undergo specialized imaging procedures, Dr. Antman said. "This would work particularly well for evaluating new imaging techniques. For patients for whom the issue is multiple scans, once the optimum imaging schedule is determined, subsequent patients could receive those evaluations in the community." ◆

(Director's Update continued from page 1)
the development of the National Advanced Technologies Initiative for cancer (NATIc), an above-and-beyond proposal aimed at harnessing the enormous medical potential of emerging technologies. NATIc will provide the research and development communities with the necessary infrastructure to speed the development of new diagnostic tests and cancer treatments by fostering, integrating, and applying the nation's vast biomedical technology resources and capabilities. Advanced health care technologies resulting from this initiative will provide unique resources to help NCI achieve its goals, but also will support research advances in other diseases and ultimately accelerate the emergence of personalized medicine.

While this budget proposal focuses on scientific and technological advances, it also outlines how progress in each area will improve patient care and public health. We envision evidence-based, patient-centered care that is delivered in a timely, technically competent fashion and is administered with sound communication, shared decision making, and cultural sensitivity.

To improve the quality of cancer care, the *Nation's Investment* proposes funding focusing on community-based interventions that address disparities in care; training programs to create a diverse and culturally sensitive research and care workforce; and collaborations to improve early detection, diagnosis, prognosis, treatment, and survivorship for people over 65.

To optimize health and quality of life after cancer, we propose including more quality-of-life end points in NCI-supported trials, as well as continued research and development to improve understanding of survivorship issues in underserved populations; reduce long-term side effects of cancer treatment; and identify genetic factors that affect prognosis, tumor progression, therapeutic outcomes, and side effects.

Finally, a cross-cutting element of the 2006 budget proposal is our effort to invigorate the use of team science and research teams of the future. Increasingly, we believe that scientists must be able to work as part of interdisciplinary teams that allow them to more fully characterize the interlocking environmental, lifestyle, genetic, and molecular variables that contribute to cancer.

Our nation's investment in the past has led us to unprecedented opportunities across a continuum of discovery, development, and delivery that will make it possible for millions of people to no longer fear cancer as a cause of suffering and death. Rapid progress in prevention, early detection, elimination, and control of this disease will make this goal a reality.

At NCI, we believe the 2015 goal is achievable and that we are on a trajectory for success. There are, of course, hurdles that must be overcome, but I believe that our 2006 plan and budget proposal affirms that we are on the right track and requests the necessary resources to remain on course.◆

Dr. Andrew C. von Eschenbach
Director, National Cancer Institute

Special Report

Bringing Real-Life Health Issues to Hollywood

Nanette weighs 300 pounds, and it's ruining her life. Besides crushing her self-esteem, it's putting her at risk for critical health problems, including heart disease, diabetes, high blood pressure, and stroke, as well as a variety of cancers. Her story is sad, but not uncommon—until you hear the dramatic twist: Nanette is only 15 years old. Cue the music, add some recent information about obesity among young people, and you've got a script for compelling TV.

At least that's the goal of the Hollywood, Health and Society (HH&S) program, based at the University of Southern California's Norman Lear Center. Triggered by breaking news and guided by the priorities of its funding agencies, the NCI and the Centers for Disease Control and Prevention (CDC), HH&S works with writers and producers to ensure that accurate, high-priority health information makes it into the movies and TV shows that millions of Americans watch every week.

"Most of the writers and producers on TV shows with whom we work tend not to have medical backgrounds," explained Vicki Beck, the program's director, at an NCI symposium on November 9, where attendees learned about HH&S results and were invited to participate in future efforts. To help writers and producers get it right, HH&S uses a Web site, tip sheets, and a newsletter, *Real to Reel*, that includes timely health topics and links to fact sheets on the CDC and NCI Web sites. For those who have more specific questions or need more information, HH&S arranges one-on-one consultations and panel discussions with subject matter experts. The program has provided this type of service to more than 60 TV shows, including *ER, Law & Order SVU, The Bold and the Beautiful, The George Lopez Show*, and *Medical Investigation*, as well as to shows on the Spanish-language network Telemundo.

During the symposium, Dr. Harold Freeman, the director of NCI's Center to Reduce Cancer Health Disparities, talked about working with writers on the upcoming ABC show, *Gray's Anatomy*, encouraging them to use real-life experiences in their storylines. Dr. Freeman listed some of the cultural myths that can contribute to health disparities, including the idea that cancer spreads when it is exposed to the air—just one reason why someone might refuse surgical treatment for a tumor—and convictions among some cultures that only a woman's husband should touch her in certain places, a concept that might discourage women from Pap screening. "Beliefs play a big role in how people either accept or don't accept health care," he said. "For a [TV writer]…it gets down to the issue of how you get people to make the right choices."

The entertainment industry seems primed for guidance like this. Last May, for example, after contacting HH&S for background on heart disease among teenagers, NBC ran an *ER* episode in which an obese African American teenager is diagnosed with high blood pressure and later survives cardiac arrest. During his recovery, the teen mentions that he should eat his "five a day"—a success for HH&S, which has heavily promoted NCI's 5 A Day campaign to encourage people to eat at least five servings of fruits and vegetables every day. An online survey showed that this message stayed with viewers, who reported taking healthy actions, such as eating more fruits and vegetables and exercising, in the 3 months after the episode aired.

"Most writers want to do the right thing," said HH&S project manager Mandy Shaivitz. "They truly are interested in educating audiences, and they recognize the reach and impact of what they do." And with the demand for HH&S services, it's clear that including accurate and compelling health information in scripts does more than just inform the public: It makes for good TV. ◆

For more about Hollywood, Health & Society, go to http://www.learcenter.org/html/projects/?&cm=hhs.

Cancer Research Highlights

Tamoxifen's Risks Similar in African American and White Women

African American and white women who are treated with tamoxifen for breast cancer appear to have the same risks of contralateral breast cancer and thromboembolic events, according to a new study by Dr. Worta McCaskill-Stevens of NCI's Division of Cancer Prevention in the December 1 *Journal of the National Cancer Institute*.

Between 2 and 15 percent of women diagnosed with breast cancer will develop contralateral breast cancer—cancer in the opposite breast—depending on age and other factors. Tamoxifen has been shown to reduce the risk of contralateral breast cancer by 47 percent in women with early-stage primary breast cancer, but the trials demonstrating this were done largely in populations of white women, and little data exist on the drug's effects on African American women. Tamoxifen use is also associated with an increased risk of thromboembolic events, such as stroke, and the African American population has more risk factors—such as cardiovascular disease and diabetes—for these events compared with the white population.

Dr. McCaskill-Stevens and colleagues pooled data from 13 National Surgical Adjuvant Breast and Bowel Project clinical trials that had included more than 20,000 women. They found that in women from both ethnic groups who had estrogen-receptor-positive tumors, tamoxifen use was associated with a similar reduction in contralateral breast cancer and thromboembolic events.

"It is not unreasonable to extrapolate these findings to the prevention setting," the authors wrote. "Our data therefore provide further support for the need to assess an individual woman's health and personal history, not only her race and ethnicity, to determine the benefits and risks of tamoxifen as a chemopreventive agent."

Study Finds BCL6 Protein Inactivates p53 Tumor Suppressor

The BCL6 protein can turn off the expression of the p53 tumor suppressor in B-cells, according to a study published in the November 2 *Nature*. Normally, this inactivation of p53 allows B-cells to grow rapidly and produce numerous antibodies, but the findings also showed that if BCL6 is constantly expressed, the excess growth can lead to the development of B-cell lymphomas.

High levels of BCL6 are usually only expressed in B-cells in the germinal center, a lymphoid structure in which B-cells proliferate and produce antibodies. To produce a diverse set of antibodies, germinal center B-cells undergo a series of selective mutations to immunoglobulin, the protein that makes up antibodies. BCL6 expression is believed to be important for this process, but the precise mechanism has been unclear.

Ryan T. Phan and Dr. Riccardo Dalla-Favera at Columbia University found that BCL6 acts by suppressing the expression of the p53 protein. They observed that injecting increasing amounts of a vector expressing BCL6 resulted in a dose-dependent decrease in p53 expression. They also found that BCL6 binds to the DNA around the p53 gene, thus preventing transcription.

Numerous other proteins are regulated by p53, which controls cell growth and programmed cell death. By suppressing p53, BCL6 likely helps the B-cells tolerate DNA damage at a low level to allow for the crucial immunoglobulin mutations required to make antibodies. If BCL6 becomes too active, the authors note, then the loss of p53 function would stop all control over growth and death, leading to lymphomagenesis.

Cord Blood Stem Cells Studied in Adult Leukemia

Transplants of stem cells from newborn babies' umbilical cord blood could offer a viable treatment alternative for adults with leukemia who are unable to find well-matched bone marrow donors, according to two studies published in the November 25 *New England Journal of Medicine* (*NEJM*).

In the first study, a research team led by Dr. Mary J. Laughlin of Case Comprehensive Cancer Center and University Hospitals of Cleveland Ireland Cancer Center analyzed treatment results in 600 adult leukemia patients, comparing outcomes in those who had HLA antigen-mismatched cord blood stem cell transplants with results in two groups that received bone marrow. One group received HLA antigen-mismatched bone marrow and another received marrow from perfectly matched donors.

While patients who received the matched bone marrow had the highest survival rate (33 percent), rates

of survival were equal (22 percent) in the group that received cord blood transplants and the group that received mismatched marrow. "HLA-mismatched cord blood should be considered an acceptable source of hematopoietic stem-cell grafts for adults in the absence of an HLA-matched adult donor," the researchers concluded.

A similar conclusion was reached by European investigators led by Dr. Vanderson Rocha of the Hospital Saint-Louis in Paris. The team looked at treatment outcomes in 682 adult leukemia patients who received stem cell transplants from unrelated donors—98 cord blood transplants (92 mismatched) and 584 transplants of perfectly matched bone marrow. Finding comparable success rates in the two groups, researchers concluded, "Cord blood from an unrelated donor is an alternative source of hematopoietic stem cells for adults with acute leukemia who lack an HLA-matched bone marrow donor."

Experts have estimated that as many as 16,000 people diagnosed annually with leukemia need a bone marrow transplant but cannot get one because a close match is unavailable. Cord blood is readily available, but—as Dr. Robert Steinbrook pointed out in a commentary about cord blood banks that appears in the same issue of *NEJM*—has a much lower concentration of blood cell-forming stem cells compared with bone marrow. This article is also accompanied by an editorial by Dr. Miguel A. Sanz on the issue of cord blood for leukemia.

Gastric Cancer May Arise from Bone Marrow-Derived Cells

Researchers in the United States and Japan have found that gastric cancer can originate from bone marrow-derived cells (BMDCs). In a paper published in the November 26 *Science*, researchers investigated the possible role of BMDCs in carcinoma progression in mice chronically infected with *Helicobacter* species. They found that BMDCs recruited into the stomach due to persistent inflammation could subsequently undergo transformation and progress to epithelial cancer. This research was funded by grants from the NIH and Vanderbilt, as well as a VA merit award.

In cases of chronic inflammation, stem cells, such as the BMDCs, are recruited to the site of injury to replenish lost tissue. Stem cells' unique abilities, such as rapid proliferation and resistance to apoptosis, allow them to restore the tissue quickly, but also make them suitable targets for malignant transformation. Gastric cancer resulting from a chronic *Helicobacter* infection is a prime example, and malignant stem cells could be responsible.

The researchers tested this possibility by using radiation to deplete the bone marrow cells from mice and then transplanted specially marked BDMCs. They then examined for the presence of marked cells in the gastric lining after giving the mice various injuries. Acute *Helicobacter* infections or acute ulceritis did not lead to recruitment of BDMCs to repopulate the stomach. However, when they examined mice infected with *Helicobacter* for a year that had developed gastric cancer, they found that the malignant cells had arisen from the transplanted marrow cells.

"The concept that epithelial cancers can arise from BMDCs greatly alters our overall understanding of cancer initiation and progression," state the authors. ◆

Funding Opportunities

Centers of Cancer Nanotechnology Excellence

RFA-CA-05-024
Letter of Intent Receipt Date: Feb. 25, 2005
Application Receipt Date: Mar. 25, 2005

NCI invites applications from investigators interested in participating in an initiative to establish up to five Centers for Cancer Nanotechnology Excellence (CCNEs). The intent of this RFA is to establish interdisciplinary research teams that collectively have the breadth of expertise not only to identify approaches, but also to validate and translate nanotechnology for a variety of cancer applications, up to and including pre-clinical testing. The overarching goals of the CCNE initiative are to design and test nanomaterials and nanodevices and to translate their use into clinical research, resulting ultimately in the introduction of novel diagnostic tools and techniques to modulate and overcome cancer processes. NCI's primary objective for this effort is to develop products and devices that constitute a new set of research tools for use by scientists in both the public and private sectors.

This funding opportunity will use the NIH U54 award mechanism.

For more information see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=2463.

Inquiries: Dr. Gregory J. Downing—downingg@mail.nih.gov

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Featured Clinical Trial

Preventing Bladder Cancer Recurrence and Progression

Name of the Trial

Phase II Randomized Study of Adjuvant Erlotinib and Green Tea Extract (Polyphenon E) in Preventing Recurrence and Progression in Former Smokers with Resected High-Grade Superficial Transitional Cell Carcinoma of the Bladder (UCLA-0301091-02). See the protocol summary at http://cancer.gov/clinicaltrials/UCLA-0301091-02.

Principal Investigator

Dr. Arie Belldegrun of the Jonsson Comprehensive Cancer Center, UCLA

Dr. Arie Belldegrun
Principal Investigator

Why Is This Trial Important?

Most patients diagnosed with bladder cancer have tumors that have not penetrated the muscle of the bladder wall (superficial bladder cancer). Even with successful surgery, however, recurrence is common.

Researchers are interested in developing effective drug therapies to prevent bladder cancer recurrence after surgery. The use of drugs to prevent cancer or cancer recurrence is called chemoprevention. In this study, two types of drugs are being evaluated to see whether they are effective in preventing bladder cancer recurrence and progression after surgery in patients with a history of smoking.

One of the drugs, Polyphenon E (Mitsui Norin Co. Ltd.), is made from green tea. "Preclinical studies have shown that substances called catechins in green tea extracts are very good at preventing bladder cancer cells from multiplying," said Dr. Belldegrun.

The other drug, erlotinib (Tarceva, OSI Pharmaceuticals), which was recently approved to treat lung cancer, inhibits a protein called epidermal growth factor receptor (EGFR). Approximately 50 percent of bladder tumors show high levels of EGFR, and EGFR expression has been associated with bladder tumor aggressiveness.

"With this study, we hope to find a way to prevent recurrence and, more importantly, to prevent progression of bladder cancer in patients with a history of smoking," Dr. Belldegrun added.

Who Can Join This Trial?

Researchers seek to enroll 330 former smokers aged 19 and over with a confirmed diagnosis of transitional cell carcinoma (TCC) of the bladder. See the full list of eligibility criteria for this trial at http://cancer.gov/clinicaltrials/UCLA-0301091-02.

Where Is This Trial Taking Place?

Study sites in the United States are enrolling patients in this trial. See the list of study sites at http://cancer.gov/clinicaltrials/UCLA-0301091-02.

Contact Information

See the list of study contacts at http://cancer.gov/clinicaltrials/UCLA-0301091-02 or call the NCI's Cancer Information Service at 1-800-4-CANCER (1-800-422-6237). The call is toll-free and completely confidential. ◆

An archive of "Featured Clinical Trial" columns is available at http://cancer.gov/clinicaltrials/ft-all-featured-trials.

(Funding Opportunities continued from page 5)

Multidisciplinary Career Development in Cancer Nanotechnology Research

RFA-CA-05-025
Application Receipt Date: Mar. 25, 2005

This RFA supports the career development of individuals from the basic, biomedical, clinical, and information sciences and engineering who are pursuing research that applies nanotechnology development and application for the prevention, detection, diagnosis, or treatment of cancer. The goal of this fellowship program in cancer nanotechnology research is to train highly skilled research scientists to develop and test nanomaterials and nanodevices and to apply these advances to address cancer-related issues. Awardees are expected to work as productive members of multidisciplinary research teams, assembled to address critical nanotechnology platform needs in cancer.

This funding opportunity will use the Kirschstein-NRSA F32 and F33 award mechanisms.

For more information see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=2462.

Inquiries: Dr. Gregory J. Downing—downingg@mail.nih.gov

Cancer Nanotechnology Platform Partnerships

RFA-CA-05-026
Letter of Intent Receipt Date: Feb. 25, 2005
Application Receipt Date: Mar. 25, 2005

NCI invites applications for research project grants (RPGs) to support development of nanotechnology platforms for basic, applied, and translational multidisciplinary research that uses nanotechnology (e.g., nanoscale devices or nanomaterials less than 1000 nm in size, although the assembly, synthesis, and/or fabrication of components at dimensions less than 300 nm should be demonstrated) in cancer research. Proposed projects will be eligible for consideration if they

address one or more of the following thematic/programmatic areas of focus: molecular imaging and early detection, *in vivo* imaging, reporters of therapeutic efficacy, multifunctional therapeutics, prevention and control of cancer, and research enablers.

This funding opportunity will use the R01 award mechanism.

For more information see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=2461.

Inquiries: Dr. Gregory J. Downing—downingg@mail.nih.gov

Preventing Mitochondrial Oxidative Stress in Diabetes and Obesity

RFA-DK-05-001
Letter of Intent Receipt Date: Jan. 27, 2005
Application Receipt Date: Feb. 24, 2005

The objective of this RFA is to translate recent advances in understanding the mitochondrial ROS production associated with hyperglycemia to therapeutic interventions that would target mitochondrial ROS to prevent or ameliorate diabetic complications. Discovering and characterizing molecular targets, agents, and assays to prevent and measure the accumulation of mitochondrial ROS secondary to hyperglycemia would be appropriate research topics for this RFA. The proposed research should primarily focus at the cellular and subcellular level, but could expand to studies in tissues, organs, animal models, and small, pilot clinical studies. The choice of cell types and model systems should be appropriate for the pathophysiology of diabetic complications and nonalcoholic steatohepatitis.

This funding opportunity will use the R01 and R21 award mechanism(s).

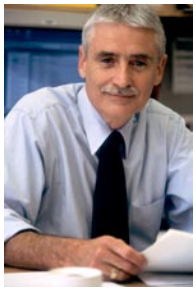
For more information see http://cri.nci.nih.gov/4abst.cfm?initiativeparfa_id=2460.

Inquiries: Dr. Sharon Ross, MPH—rosssha@mail.nih.gov ◆

Notes

Hartwell Presents Trent Lecture

On November 30, Dr. Leland Hartwell, Nobel laureate and president of the Fred Hutchinson Cancer Research Center, presented the 2004 Jeffrey M. Trent Lecture in Cancer Research, "Opportunities to Improve Cancer Outcomes." He discussed strategies to improve diagnostic biomarkers for early detection, a critical area of cancer treatment. "We already have a cure for cancer," he said. "If we can detect it early enough, then surgery can cure cancer." Dr. Hartwell noted that while the pipeline for discovery of a new anticancer drug could cost as much as $800 million, new biomarkers could be discovered at a fraction of the cost. While humans have more than a million protein species that could be used as biomarkers, Dr. Hartwell said that improved knowledge about the processes within cancer cells would allow researchers to find a small number of suitable candidate proteins within that group.



New Opportunities for Cancer Research in NIH Roadmap

Many funding opportunities, including new initiatives and re-announcements, are available for applications in the NIH Roadmap for Medical Research, a series of initiatives designed to transform the nation's medical research capabilities. Current NIH Roadmap funding opportunities can be found at: http://nihroadmap.nih.gov/grants/index.asp. Up-to-date information throughout the coming year can be found on the NIH Roadmap home page at http://nihroadmap.nih.gov.

NCI and the cancer research community are uniquely positioned to participate in the NIH Roadmap efforts. NCI staff and investigators are playing key roles on a number of the Roadmap activities that began in fiscal year 2004, contributing over $16.2 million in support and providing expertise to the theme areas and initiatives that align closely with the institute's strategic priorities and overall mission. Activities include nanomedicine; the creation of an imaging probe database, regional translational research centers, and core services; and the creation and support of interdisciplinary and multidisciplinary research teams of the future. Information about NCI's participation in the NIH Roadmap is available at http://cancer.gov/researchandfunding/NIHRoadmap. ◆

Correction

In the November 23 lead story on genetic signatures that predict survival in patients with follicular lymphoma, the *NCI Cancer Bulletin* incorrectly stated that the NCI research team used the Lymphochip created in Dr. Louis Staudt's laboratory to perform gene expression profiles. In fact, the researchers used another commercially available microarray. We regret the error. ◆

Featured Meetings

This is a list of selected scientific meetings sponsored by NCI and other organizations. For locations and times and a more complete list of scientific meetings, including NCI's weekly seminars and presentations open to the public, see the NCI Calendar of Scientific Meetings at http://calendar.cancer.gov.

NCI Advisory Committee Upcoming Meetings

Date	Advisory Committee
Dec. 14	NCI Director's Consumer Liaison Group
Jan. 24	President's Cancer Panel

Selected Upcoming Meetings of Interest

Date	Meeting	NCI Speakers
Jan. 6-11	Molecular Targets for Cancer Therapy	Dr. J. Carl Barrett, Director, Center for Cancer Research; Dr. Elise Kohn, Laboratory of Pathology, Center for Cancer Research
Jan. 16-21	New Frontiers in Cancer Detection & Diagnosis	Dr. J. Carl Barrett, Director, Center for Cancer Research; Dr. Peter Greenwald, Director, Division of Cancer Prevention; Dr. Richard Simon, Chief, Biometric Research Branch, Division of Cancer Treatment and Diagnosis; Dr. Sudhir Srivastava, Chief, Cancer Biomarkers Research Group, Division of Cancer Prevention

NCI Exhibits

NCI Exhibits are presented at various professional and society meetings. Further information about the NCI Exhibits program can be found at http://exhibits.cancer.gov.

The *NCI Cancer Bulletin* is produced by the National Cancer Institute (NCI). NCI, which was established in 1937, leads the national effort to eliminate the suffering and death due to cancer. Through basic, clinical, and population-based biomedical research and training, NCI conducts and supports research that will lead to a future in which we can identify the environmental and genetic causes of cancer, prevent cancer before it starts, identify cancers that do develop at the earliest stage, eliminate cancers through innovative treatment interventions, and biologically control those cancers that we cannot eliminate so they become manageable, chronic diseases.

For more information on cancer, call 1-800-4-CANCER or visit http://www.cancer.gov.

NCI Cancer Bulletin staff can be reached at ncicancerbulletin@mail.nih.gov.